

INTEREST RATE AND INFLATION IN UGANDA, (1998-2018)

BY

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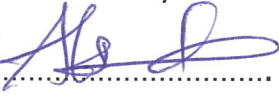
BEC/10016/18/DF

**RESEARCH DISSERTATION SUBMITTED TO THE COLLEGE OF ECONOMICS
AND MANAGEMENT IN THE DEPARTMENT OF ECONOMICS AND APPLIED
STATISTICS IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
AWARD OF BACHELOR'S DEGREE OF ARTS IN ECONOMICS OF KAMPALA
INTERNATIONAL UNIVERSITY**

MAY-2019

DECLARATION

I ABDIRASHID MOHAMED MUSE REG NO. BEC/10016/18/DF, hereby declare to the best of my knowledge that this research is purely my own effort and has never been submitted in any university around the globe for any award.

Sign. 

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Date. 15/05/2019.

APPROVAL

This work was supervised from the development of the proposal to completion of the full research report and I approve that the work should be submitted to the Department of Economics and Applied Statistics and to the college of Economic and Management of Kampala International University.

SIGN: 

MR: MUHEREZA FRANKLIN

DATE: 15/05/2019

DEDICATION

I dedicate this research report to the Almighty God for the unending grace, undeserving favor and the gift of life he has blessed me with all which have enabled me achieve this accomplishment. My lovely mother, Maryan Hassan Isse for her unending support and lastly to my supervisor, Muhereza Franklin for his unmeasurable encouragement throughout this study.

ACKNOWLEDGEMENT

My sincere gratitude goes to the Almighty God for His endless mercies, wisdom, knowledge and Grace that has helped in my studies. Special thanks go to my mother Maryan Hassan Isse, my brother Mowlid Dalmar who has always been a source of inspiration, support and encouragement as I pursued my course. My thanks goes to all lecturers, the Department of Economics and Applied Statistics of Kampala International University for all forms of assistance rendered to me during the course of my studies. My Supervisors Mr. Muhereza Franklin for his support and guidance which led to the successful completion of this research report.

I am also indebted to my friends and course mates, the big picture members; Abdirizak Ahmed Farah and Abdilahi Ali Yusuf.

I wish to thank all my relatives and well-wishers for their moral support and prayers. And above all, I thank God for his grace and mercy that saw me through the course of my Studies.

ABSTRACT

This study explored the relationship between interest rate and inflation in Uganda from the year 1998 to 2018. The origins of inflation have been amongst the most fiercely disputed subjects of economic analysis and political argument. However economists hold little or no monopoly over casual explanations. . Subsequently the origins of inflation are somewhat an enigma. However the argument will eventually boil down to two theories; Classical theory and Keynesian theory. Also interest rates. Interest rates have been around since the ancient civilizations. Interest rate is the rate at which interest is paid by a borrower for the use of money that they borrow from a lender (brealey et al, 2001). The need for interest rates arose from societies that started to build cities and farm the land, instead of following the herds like their hunter-gatherer ancestors. The researcher used secondary data from the Central bank of Uganda and the data ranged from the year 1998 to 2018. Data analysis was made using SPSS and MS Excel. The analysis majored on three tests and these included; normality test, stationarity test and linearity test. The findings made showed that there is a negative relationship between interest rate and inflation, this means that when interest rate is high inflation is low. The researcher recommended the government to solve inflation by using measures like advocating for price controls, wage freeze among others.

ABBREVIATIONS

BOU	Bank of Uganda
GDP	Growth Domestic Product
RBD	Real Bills Doctrines
IV	Independent Variable
DV	Dependent Variable
ANOVA	Analysis of Variance
SPSS	Statistical package for social scientists

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study.

The origins of inflation have been amongst the most fiercely disputed subjects of economic analysis and political argument. However economists hold little or no monopoly over casual explanations. Subsequently the origins of inflation are somewhat an enigma. However the argument will eventually boil down to two theories; Classical theory and Keynesian theory.

Monetary theories of inflation consider the pre-requisite and the cause of continual inflation to be an expansion of the money supply greater than the real growth in the production of goods. Perhaps the earliest explanation was the "quantity theory of money." In which, Irving Fisher (1772-1823). An Inflation rate is defined as the rate at which prices generally increase (Brealey et al., 2001).

Interest rates have been around since the ancient civilizations. Interest rate is the rate at which interest is paid by a borrower for the use of money that they borrow from a lender (brealey et al, 2001). The need for interest rates arose from societies that started to build cities and farm the land, instead of following the herds like their hunter-gatherer ancestors. One person would grow grain and someone else would raise livestock. The person raising livestock wasn't paid until the livestock was grown and slaughtered, but they needed grain to get to that point. So, a system was created where the grain farmer would lend grain to the livestock rancher, who would then pay back his loan with goods he received by selling his livestock. No one shopped around for interest rates at that time - one grain farmer didn't charge a lower rate than the others. Instead, rates were set as laws.

In Ancient Mesopotamia, the interest rate on grains was 20%. Like the rest of the field of economics, the concepts of interest rates became significantly more complex during the industrial revolution. As businesses needed capital to grow, banks began fulfilling

the role of moving capital from savers to borrowers and setting the rates based on the supply and demand of money. In the early 1900s the Federal Reserve Bank was formed, which took interest rates from a term in a loan agreement to a primary tool of monetary policy.

Inflation and interest rates are often linked and frequently referenced in macroeconomics. Inflation refers to the rate at which prices for goods and services rise. In Uganda the interest rate, or the amount charged by lender to a borrower, is based on the bank of Uganda rate that is determined by the bank Reserve.

In general, as interest rates are reduced, more people are able to borrow more money. The result is that consumers have more money to spend, causing the economy to grow and inflation to increase. The opposite holds true for rising interest rates. As interest rates are increased, consumers tend to save as returns from savings are higher. With less disposable income being spent as a result of the increase in the interest rate, the economy slows and inflation decreases.

Interest rate is described as the price a borrower pays for the use of money he does not own, and he has to return to the lender. Interest can also be expressed as a percentage of money taken over the period of one year (Devereux, and Yetman, 2002). Interest rate is very well stated as the rate of increase over time of a bank deposit. An Interest, which is charged or paid for the use of money, is often expressed as an annual percentage of the principal. It is calculated by dividing the amount of interest by the amount of principal. Interest rates often change as a result of the inflation and Government policies. The real interest rate shows the nominal interest rate inflation. A negative real interest rate means that the nominal interest rate is less than the inflation rate (Gagnon, and Ihrig, 2004). Interest rate is the tool used by the central bank of a country to keep a check on any major currency fluctuation. An increase in interest rate is necessary to stabilize the exchange rate depreciation and to curb the inflationary pressure and thereby helps to avoid many adverse economic consequences.

Inflation rate means a sustained increase in the aggregate or general price level in an economy. This means there is an increase in the cost of living. High and volatile inflation can be damaging both to individual businesses and consumers and also to the economy as a whole. Generally, the inflation rate is used to measure the price stability in the economy. A low inflation rate scenario will exhibit a rising currency rate, as the purchasing power of the currency will increase as compared to other currencies.

1.2 Research Problem

Interest rates and Inflation in Uganda over the past few years Interest rate and inflation in Uganda over several years, there has been volatility on the bank lending rates in Uganda. At the end of June 2016 central lending rates averaged 23.54 percent interest rates started to rise in April 2015 as Bank of Uganda attempted to wave off any inflationary pressures resulting depreciation of the Ugandan shilling at the time.

The bank of Uganda (BoU) monetary policy committee at the time believed that further depreciation of Ugandan shilling would lead to an increase in inflation that would hurt the economy. In April 2015, the committee recommended the rising of the central bank rate (CBR) to 12 percent from 11 percent. October 2015 the central bank had been raised to 17 percent. This action of central bank meant to slow down demand in order to reduce inflationary pressure and interest rate had gone up to 25 percent by November 2015. This has been occasioned by the actions of the central bank of Uganda (BoU). During this period the inflation rate moved from 5.41 percent to 3.8 percent in the end of 2015. The interest rate may have influence the inflation rate over the period or vice versa.

Due to the increase in the level of interest rate and inflation there has been a persistent decrease in the investment and that leads to high rate of unemployment therefore this study sought to identify and address this problem.

1.3 General objectives

To establish the relationship between interest rate and the inflation rate

1.3.1 Specific objectives of the study

1. To determine the level of interest rate in Uganda from 1998-2018
2. To assess the level of inflation rate in Uganda from 1998-2018
3. To establish the effect of interest rate on inflation rate in Uganda from 1998-2018

1.4 Research questions

1. What is the level of interest rate in Uganda from 1998-2018
2. What is the level of inflation rate in Uganda from 1998-2018
3. What is the effects of interest rate and inflation rate in Uganda from 1998-2018

1.5 Scope of the study

1.5.1 Geographical scope

This study took place in Uganda as a case study. this country is officially named the Republic of Uganda is a landlocked country (except for its borders with Lake Victoria and Lake Albert) in East-Central Africa.

It is bordered to the east by Kenya, to the north by South Sudan, to the west by the Democratic Republic of the Congo, to the south-west by Rwanda, and to the south by Tanzania. The southern part of the country includes a substantial portion of Lake Victoria, shared with Kenya and Tanzania. Uganda is in the African Great Lakes region. Uganda also lies within the Nile basin, and has a varied but generally a modified equatorial climate. The country is especially located on the East African Plateau, lying mostly between latitudes 4°N and 2°S (a small area is north of 4°), and longitudes 29° and 35°E. It averages about 1,100 meters (3,609 ft) above sea level, sloping very steadily downwards to the Sudanese Plain to the north. Some international trade organizations categorize Kenya as part of the Greater Horn of Africa.

1.5.2 Content scope

This study comprised of the research objectives such as interest rate and inflation rate. Interest rate as an independent variable (IV) and inflation as a dependent variable (DV).

1.5.3 Time scope

This study was done within a period of 20 weeks that is from January 2019 to May 2019. First week done chapter one introduction was done, next two weeks was done chapter two literature review, last week the third chapter methodology was done.

1.6 Significance of the study

This study will be significant to the Government of Uganda. This is because the study showed whether the inflation rate was significantly influenced by the interest rates. The Government can therefore make policy decisions regarding how to control the inflation rate in Uganda.

This study was also important to theory of public finance as it contributes to the theory by focusing on the determinants of inflation rate especially in developing countries like Uganda. It specifically shaded more light on the role of interest rates on inflation.

The study was also important to researchers and academicians as it will be a useful guide for future researchers interested in undertaking a study on the determinants of inflation rate in a developing economy like Uganda.

The research findings will enable Uganda's policy makers to come with policies regarding the growth of the whole economy.

The research contributed to the ongoing debate about the contradictions of the casual relationship between interest rate and inflation.

The findings acted as requirement in fulfillment for the award of bachelor's degree in economics of Kampala International University.

1.7 Definition of the key terms

Inflation: Inflation is a general lowering of the value of money to buy goods and services in the market. Inflation is a rise in the price level which can result from a decrease in the amount of money in circulation as well as from an increase in the amount of money in circulation.

Interest rate: It is the rate a bank or other lenders charges to borrow its money to the borrower, or the rate a bank pays its savers for keeping money in an account.

Annual interest rate: Is the rate over a period of one year. Other interest rates apply over different periods, such as a month or a day, but they are usually annualized

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks at previous literature that relates to the subject of study. It is organized as follows: Section 2.2 discusses the definitions of inflation and interest rate under the conceptual review while section 2.3 discusses the theories of inflation under the theoretical review and Section 2.4 Talks about the effect and determinants of inflation through the empirical review. The chapter closes with a discussion of the gap of knowledge.

2.2 conceptual reviews

The concept of inflation has been defined as a persistent and sustain rise in the general price level of broad spectrum of goods and services in a country over a long period of time. Inflation has been intrinsically linked to money as captured by the often heard Maxim "inflation is too much money chasing too few goods (Hamilton, 2011). Inflation has been widely described as an economic situation where the increase in money supply is faster than the new production of goods and services in the same economy. Economics usually try to distinguish inflation from an economic phenomenon of one time increase in prices or when there is price increase in a narrow group of economic goods or service (Pianna, 2011).

In a study by Ojo, (2000) and Metberg (2000) the term inflation describes a general and persistent increase in the price of goods and services in an economy. Inflation rate is measured as the percentage change in price index (consumption price index, whole sale price index and producer price index e.t.c).

Adeoye (2012) states that inflation remain one of the major economic variables that can distort economic activities in both developed and less developed countries, although continuous inflation however is "evil" to any economy. Inflation is a condition when cost of services coupled with goods rise and entire economy seems to go hay wire. Inflation has never done any good to any economy. However, governments around the world

take appropriate steps to minimize the ill effects of inflation to certain extent (Essein, 2012).

According to Keynes, the interest rate is the reward for not hoarding, but for parting with liquidity for a specific period of time. Keynes' definition of interest rate focuses more on the lending rate.

Adebiyi (2002) will define interest rate as the return or yield on equity or the opportunity cost of deferring current consumption in the future. Some examples of interest rate include the saving rate, lending rate, and the discount rate.

Professor Lerner, in Jhingan (2003), defines interest as the price which equates the supply of "Credit" or savings plus the net increase in the amount of money in the period, to the demand for credit or investment plus net "hoarding" in the period. This definition implies that an interest rate is the price of credit, which like other price is determined by the forces of demand and supply; in this case, the demand and supply of loanable funds (Jelilov, Gylych; Muhammad Yakubu, Maimuna;, 2015).

Ibimodo (2005) defined interest rates, as the rental payment for the use of credit by borrowers and return for parting with liquidity by lenders. Like other prices, interest rates perform a rationing function by allocating limited supply of credit among the many competing demands.

Bernhardsen (2008) defines the interest rate as the real interest rate, at which inflation is stable and the production gap equals zero. That interest rate very often appears in monetary policy deliberations.

However, Irving Fisher (1936) states that interest rates are charged for a number of reasons, but one is to ensure that the creditor lowers his or her exposure to inflation. Inflation will cause a nominal amount of money in the present to have less purchasing power in the future. Expected inflation rates are an integral part of determining whether or not an interest rate is high enough for the creditor (Jelilov, Gylych; Onder, Evren;, a 2016).

The real interest rate represents a fundamental valuation of temporary provision of capital (money) corresponding to a price level constant in time. It is also obvious from

the above relation that if inflationary expectations change, nominal interest rates have to change aliquot at a constant real interest rate (Cottrell; 2005).

The real interest rate concept is irreplaceable in the research into the mutual relations of inflation, because assuming that the creditors are rational, inflation and nominal interest rates influence each other. For similar reasons, the real interest rate is used in broader economic analyses. Expected inflation is an unobservable quantity. In an expose analysis, it can be replaced by the actual rate of inflation in the following period, which is equivalent to assuming rational expectations (Bencik; 2009).

2.3 Theoretical Review

2.2.1 Keynesian View

Keynesian economic theory avows that changes in money supply do not directly have an effect on prices, and that noticeable inflation is the consequence of pressure in the economy expressing themselves in prices. According to Gordon (1988), there are three major types of inflation, or what he commonly refers to as the "triangle model.

Demand-pull theory states that the rate of inflation accelerates whenever aggregate demand is increased beyond the ability of the economy to produce (its potential output). Hence, any factor that increases aggregate demand can cause inflation. O'Sullivan and Sheffrin (2003) argue that in the long run, aggregate demand can be held above productive capacity only by increasing the quantity of money in circulation faster than the real growth rate of the economy. Gordon (1988) offers that demand inflation is beneficial to a rapid economic growth in view of the fact that the excess demand and favorable market conditions will stimulate investment and expansion.

Cost-push inflation, also called "supply shock inflation, "is a consequence of a drop in aggregate supply. This maybe because of natural disasters, or increased prices of inputs. For example, a sudden decrease in the supply of oil, leading to increased oil prices, can cause cost-push inflation. Producers for whom oil is a part of their costs could then pass this on to consumers in the form of increased prices (Gordon, 1988).

Built-in inflation is induced by adaptive expectations, and is often linked to the "price/wage spiral". Gordon (1988) suggests that it involves workers trying to keep

their wages up with prices (above the rate of inflation), and firms passing these higher labour costs onto their customers as higher prices, leading to a 'vicious circle'. He says that built-in inflation reflects events in the past, and so might be seen as hangover inflation.

The effect of money on inflation is most obvious when governments finance spending in a crisis, such as a civil war, by printing money excessively. This sometimes leads to hyperinflation, a condition where prices can double in a month or less.

According to O'Sullivan and Sheffrin (2003), money supply play a major role in determining moderate levels of inflation, although there are differences of opinion on how importunities. For example, Monetarist economists believe that the link is very strong; Keynesian economists, by contrast, typically emphasize the role of aggregate demand in the economy rather than the money supply in determining inflation. That is, for Keynesians, the money supply is only one determinant of aggregate demand.

2.2.2 Monetarist View

According to Paul (2000), the most important factor affecting inflation or deflation is how fast the money supply grows or shrinks. They consider fiscal policy, or government spending and taxation, as ineffective in controlling inflation. Monetarist saver that the empirical study of monetary history shows that inflation has always been a monetary phenomenon. The quantity theory of money, simply stated, says that any change for money in a system will change the price level.

Monetarists assume that the velocity of money is unaffected by monetary policy (at least in the long run), and the real value of output is determined in the long run by the productive capacity of the economy.

Mankiw (2002) says that under these assumptions, the primary driver of the change in the general price level is changes in the quantity of money. With exogenous velocity, the money supply determines the value of nominal output. He says that in practice, velocity is not exogenous in the short run, and so the formula does not necessarily imply a stable short-run relationship between the money supply and nominal output. However, in the long run, changes in velocity are assumed to be determined by the

evolution of the payments mechanism. If velocity is relatively unaffected by monetary policy, the long-run rate of increase in prices (the inflation rate) is equal to the long-run growth rate of the money supply plus the exogenous long-run rate of velocity growth minus the long growth rate of real output.

2.2.3 Rational Expectations Theory

Rational expectations theory holds that economic actors look rationally into the future when trying to maximize their well-being, and do not respond solely to immediate opportunity costs and pressures. In this view, while generally grounded in monetarism, future expectations and strategies are important for inflation as well.

According to Hanish (2005), a core assertion of rational expectations theory is that actors will seek to "head off" central-bank decisions by acting in ways that fulfill predictions of higher inflation. This means that Banks must establish their credibility in fighting inflation, or economic actors will make bets that the Bank will expand the money supply rapidly enough to prevent recession, even at the expense of exacerbating inflation. Thus, if a Bank has a reputation as being "soft" on inflation, when it announces a new policy of fighting inflation with restrictive monetary growth economic agents will not believe that the policy will persist; their inflationary expectations will remain high, and so will inflation. On the other hand, if the Bank has a reputation of being "tough" on inflation, then such a policy announcement will be believed and inflationary expectations will come down rapidly, thus allowing inflation itself to come down rapidly with minimal economic disruption.

2.2.4 Austrian View

The Austrian School states that inflation is an increase in the money supply, rising prices are merely consequences and this semantic difference is important in defining inflation. Shostak (2000) says that Austrians stress that inflation affects prices in various degrees, i.e. that prices rise more sharply in some sectors than in other sectors of the economy. He says that the reason for the disparity is that excess money will be concentrated to certain sectors, such as housing, stocks, or healthcare. Because of this disparity, Austrians argue that the aggregate price level can be very misleading when observing

the effects of inflation. He declared that Austrian economists measure inflation by calculating the growth of new units of money that are available for immediate use in exchange, that have been created over time.

2.2.5 Real Bills Doctrine

Rothbard (2008) says that within the context of a fixed specie basis for money, one important controversy is between the quantity theory of money and the real bills doctrine (RBD). He says that within this context, quantity theory applies to the level of fractional reserve accounting allowed against specie, generally gold, held by a bank. Currency and banking schools of economics argue the RBD that banks should also be able to issue currency against bills of trading, which is "real bills that they buy from merchants. This theory was important in the 19th century in debates between" Banking "and" Currency" schools of monetary soundness, and in the formation of the Federal Reserve. Rothbard says that in the wake of the collapse of the international gold standard post1913, and the move towards deficit financing of government, RBD has remained a minor topic, primarily of interest in limited contexts, such as currency boards discredited."

According to Timberlake (2005), the debate between currency, and quantity theory, and banking schools in Britain during the 19th century herald current questions about the credibility of money in the present. In the 19th century the banking school had greater influence in policy in the United States and Great Britain, while the currency school had more influence" on the continent", that is in non-British countries, particularly in the Latin Monetary Union and the earlier Scandinavian on monetary union.

2.2.6 Anti-Classical or Backing Theory

Baumol and Alan (2006) note that another issue associated with classical political economy is the anti-classical hypothesis of money, or "backing theory." The backing theory argues that the assets and liabilities of the issuing agency determine the value of money. Unlike the Quantity Theory of classical political economy, the backing theory argues that issuing authorities can issue money without causing inflation so long as the

money issuer has sufficient assets to covered emption. Baumoland Alansay that there are very few backing theorists, making quantity theory the dominant theory explaining inflation.

2.2.7 Marxist Theory

In Marxist, economics value is based on the labor required to extract a given commodity versus the demand for that commodity by those with money, this is according to Bresciani (2006). He says that the fluctuations of price in money terms are in consequential compared to the rise and fall of the labor cost of a commodity, since this determines the true cost of a good or service. In this, Marxist economics is related to other "classical" economic theories that argue that monetary inflation is caused solely by printing notes in excess of the basic quantity of gold. However, Marxar guest hatthe real kind of inflation is in the cost of production measured in labor. Bresciani says that because of the classical labor theory of value, the only factor that is important is whether more or less labor is required to produce a given commodity at the rate, it is demanded

2.3 Empirical Review

.A study by Ngugi and Kabubo(1998) to track down the financial liberalization process in Uganda and empirically tests for the interest rate determination in a liberalized market found that though emphasis in the literature on sequencing of financial reforms is first of all on achieving macroeconomic stability and other sector a liberalization before financial liberalization, the process in Uganda showed that financial liberalization was followed by other reforms, including trade liberalization, Macroeconomic economic stability was not achieved before liberalizing interest rates. In addition, even immediately after the liberalization of interest rates, inflationary pressure was increasing, making it impossible to achieve real interest rates.

The study further found that the spread between lending and deposit rates widened with liberalization, while the short-term rates increase data faster rate compared with long-term rates resulting in a negatively sloped yield curve. The Treasury bill rate operated as the yard stick for short-term rates. Commercial banks increased deposit

rates to compete for the deposits held by the nonbanking public.

According to Asgharpur, Kohneshahri, and Karami (2007), there is a unidirectional causality from interest rate to inflation rate in 40 Islamic countries. The finding have practical policy implications for decision makers in the area of macroeconomic planning particularly in Islamic countries. The result simply that banks must reduce interest rate to decrease the inflation.

Backman (2011) empirically investigates if the real interest rate negatively affects commodity prices and if they exhibit overshooting characteristics, using the Euro real interest rate as a proxy for world interest rate. This is analyzed by means of a VAR model, by which the output is used to specify impulse responses and variance decompositions. The findings show that the Euro real interest rate negatively affects commodity prices over the medium run.

A research conducted by Kiptui (2009) examines the oil price pass-through to inflation in order to inform monetary policy decisions This research estimates a traditional Phillips curve to derive estimates of oil price pass-through to inflation in Uganda. It is shown that oil prices have been correlated with inflation. This correlation seems to have declined towards the early 90's but started to increase after trade liberalization.

The estimation results indicate that changes in oil prices have had significant effects on inflation. Other findings are that inflation has been significantly influenced by exchange rate changes and changes in aggregate demand conditions as captured by the output gap.

The measure of oil price pass-through to inflation is found to be 0.05 in the short-run and 0.10 in the long-run much lower compared to exchange rate pass-through of 0.32 in the short-run and 0.64 in the long run. It implies that a 10 percent increase in oil prices leads to only 0.5 percent increase in inflation in the short-run and 1percent in the long run. Oil price pass-through is therefore low and incomplete, consistent with findings in other studies.

Finally, a study by Durevall and Ndung'u (1999) to analyse the dynamics of inflation in Uganda found that the exchange rate, foreign prices, and terms of trade have long-

runs effect on inflation while money supply and interest rates only have short-run effects.

The dynamics of inflation were also found to be influenced by food supply constraints.

Leoning (2011) and Durevall et al. (2012), find that inflation in agricultural economies in Uganda are associated with sharp rise in foreign prices, which account for import prices or prices of internationally traded goods.

Nachega (2001) argues that money demand in Uganda can be explained output and exchange rate or inflation.

IMF (2011) conducted a study which identifies energy prices, especially fuel prices as the second determinants of inflation in Uganda, According to the IMF report recent rise in petrol prices has put pressure in fuel prices in most of countries

2.4 Research Gaps

This study identified the following gaps that requires immediate attention, these includes:

2.4.1 Literature gap

Ngugi (1998) conducted a study on interest rate and inflation in Uganda. However, this study had scanty literature review, thus the need for the research to conduct this study so as to fill this gap.

2.4.2 Empirical gap

Backman (2011), conducted a study on interest rate and inflation rate, there is a lack of rigorous research in the literature review, no study to date had directly attempted to empirically evaluate on interest rate and inflation rate, very little empirical research was done on interest rate and inflation rate.

2.4.3 Theoretical gap

The theory on interest rate and inflation rate is rather dated and the current studies bear the worthy of recognition. However, Gardon (1998) conducted a study on interest rate and inflation rate, however, the study had no stronger theoretical basis for literature review.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology that was used in the study. The research design is presented in section 3.2 followed by the sampling design in section 3.3, the data collection in section 3.4 and data analysis in section 3.5.

3.2 Research Design

Since this research sought to explain a causal relationship between interest rates and inflation in Uganda, a correlation research design was used. In the development of the research, a regression model was designed from secondary data giving annual figures of the dependent and independent variables in the model. The secondary data was used to develop, and prove the reliability of the model hence assisted in the explanation of the relationship between interest rates and inflation. The annual inflation rates and interest rates were generated by the Uganda National Bureau of Statistics.

3.3 Sampling Design

A 20-year period between 1998 and 2018 was selected on which the research was based. The period between 1998 and 2018 was representative enough in analyzing the relationship that is present between the variables (interest rates and inflation).

3.4 Data Collection

Data collected for the research came from secondary sources mainly found in official government publications and other government departments like the Bank of Uganda and Uganda National Bureau of statistics. Secondary data was useful in building the model and conducting tests there on. Annual data for nominal interest rates and for inflation from 1998 - 2018 was collected mainly from the Bank of Uganda.

3.5 Data Analysis

First, the study analyzed the causality between interest rate and nominal inflation rate using the Granger causality test which is a vector auto regression (VAR) model application. Two tests were obtained from this analysis: the first examined the null hypothesis that the nominal interest rate does not Granger-cause inflation, and the second test examined the null hypothesis that the inflation does not Granger-cause the nominal interest rate. This research also was set to investigate the relationship between interest rates and inflation in Uganda. This relationship was designed on a simple regression model assuming a linear relationship between the variables. The following model was used:

$$Interest = \beta_0 + \beta_1 Inflation + \beta_2 Controls + \varepsilon.$$

Where

Inflation is the nominal inflation rate

Interest is the interest rate

Controls are control variables such as GDP and Money supply

β_0 , β_1 and β_2 are referred to as the model parameters,

ε : is the probabilistic error term that accounts for the variability in *inflation* that cannot be explained by the linear relationship with.

The correlation coefficient was used to measure the linear association between two variables. The student-test was conducted on the variables to determine the significance of the variables in the model (Anderson, Sweeney & Williams, 1994). Data was presented in tables, charts, and graphs.

CHAPTER FOUR

RESULTS AND DISCUSSIONS OF FINDINGS

4.0 Introduction

This chapter contains the source of the data, testing of normality, stationarity (Unit root test) and linearity of the variables in the study and these variables include; inflation rate and interest rate in Uganda from the year 1998 to 2018.

4.1 Data source

The data was retrieved from the website of the central bank of Uganda. The data has three variables and these include; GDP, inflation rate and interest rate of Uganda from 1998 to 2018. The data is presented as below.

Table 4.1: GDD, interest rate and inflation rate in Uganda from 1998 to 2018

YEAR	GDP (billions)	INTREST RATE	INFLATION RATE
1998	6.585	11.101	0.875
1999	5.999	9.433	5.759
2000	6.139	21.687	3.382
2001	5.841	10.622	1.922
2002	6.179	17.334	-0.3
2003	6.337	22.966	8.71
2004	7.94	10.329	3.666
2005	9.014	4.339	8.602

2006	9.943	21.766	7.205
2007	12.29	15.909	6.073
2008	14.24	10.981	12.041
2009	18.17	13.243	13.074
2010	20.19	-9.749	3.972
2011	20.18	8.689	18.677
2012	23.11	16.44	14.017
2013	24.6	3.809	4.779
2014	27.29	18.513	4.668
2015	27.1	17.581	5.59
2016	24.08	16.758	5.21
2017	25.89	19.538	5.63
2018	27	14.115	3.83

Source: Central bank of Uganda

4.2 Testing of Normality about the variables in the study

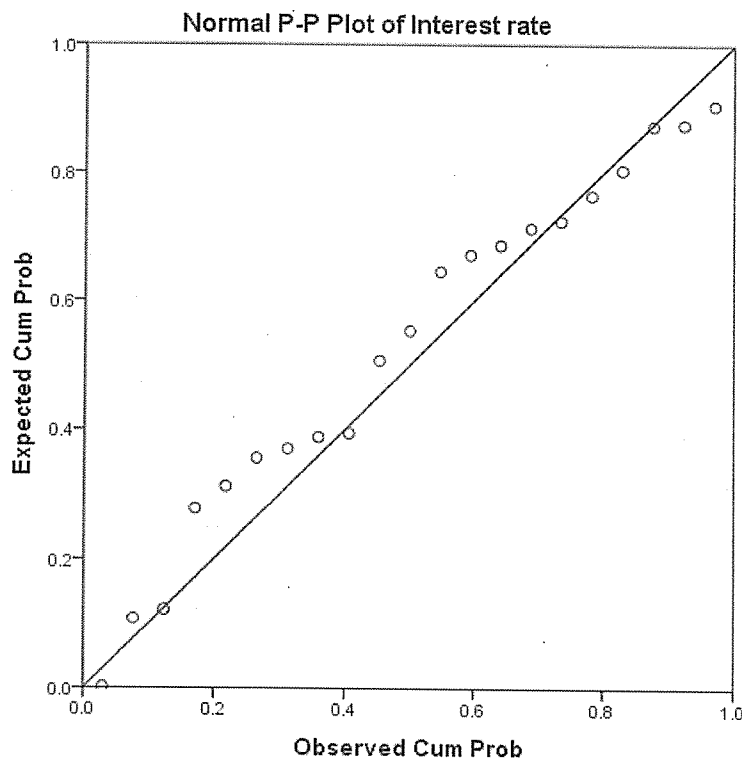
4.2.1 Testing of Normality about Inflation rate using Shapiro Wilkson's test.

4.2.1:Tests of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
inflation rate	.913	21	.062

For Shapiro Wilkson's test, the criterion is that if statistic value of Shapiro wilkson's test is approaching 1, data is normally distributed. From the table 4.2.1 above, the statistic value is 0.913 which is approximately to 1, thus the data about inflation rate is normally distributed. The data about inflation rate is normally distributed thus the researcher used it for further analysis.

4.2.2 Testing of Normality about interest rate using autocorrelations



The criterion is that if plots are near the regression line, data is said to be normally distributed. From the above output, since most of the plots are near the regression line, data on interest rate is normally distributed, thus the researcher used the data about interest rates in further data analysis.

4.3 Testing for Stationarity about the variables in the study

4.3.1 Testing for Stationarity about inflation rate using autocorrelations

Table 4.3.1: Stationarity about inflation rate

lags	autocorrelations	statistic	
		Df	Prob>Q
1	.233	1	.251
2	.173	2	.354
3	.327	3	.175
4	.095	4	.266
5	-.144	5	.323
6	-.035	6	.437
7	-.351	7	.181
8	-.092	8	.235
9	-.230	9	.183
10	-.352	10	.054
11	-.231	11	.038
12	.001	12	.056
13	-.139	13	.059
14	-.037	14	.081
15	.049	15	.106
16	.089	16	.118

The criterion is that accept H_0 : time series data about inflation rate is stationary if most of the (Prob>Q) is less than 0.05(significance level). From the table 4.3.1 above, most of the (Prob>Q) values are greater than 0.05 level of significance, thus the null hypothesis is rejected. This means that the data about inflation rate is not stationary rather trending from the year 1998 to 2018.

4.3.2 Testing of stationarity about interest rate using autocorrelations and partial autocorrelations

Table 4.3.2: Unit root test about Interest rate

Lags	autocorrelations	Statistic	
		Df	Sig. ^b
1	-.003	1	.990
2	-.106	2	.867
3	.262	3	.546
4	-.338	4	.250
5	-.027	5	.369
6	.074	6	.472
7	-.401	7	.134
8	-.075	8	.184
9	.078	9	.239
10	-.235	10	.173
11	.058	11	.224
12	.109	12	.252
13	-.061	13	.306
14	.123	14	.309
15	.058	15	.360
16	-.007	16	.430

The criterion is that accept H_0 : time series data about Interest rate is stationary if most of the (Prob>Q) is less than 0.05(significance level). From the table 4.3.2 above, most of the (Prob>Q) values are greater than 0.05 level of significance, thus the null

hypothesis is rejected. This means that the data about Interest rate is not stationary rather trending from the year 1998 to 2018

4.4 Testing of Linearity about variables

Testing for linearity about Inflation rate and interest rate using regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.621	2.125		3.116	.006
Interest rate	-.006	.141	-.010	-.043	.966

Table 4.4 above, shows the regression model of two variables that is inflation rate and interest rate. The regression model is:

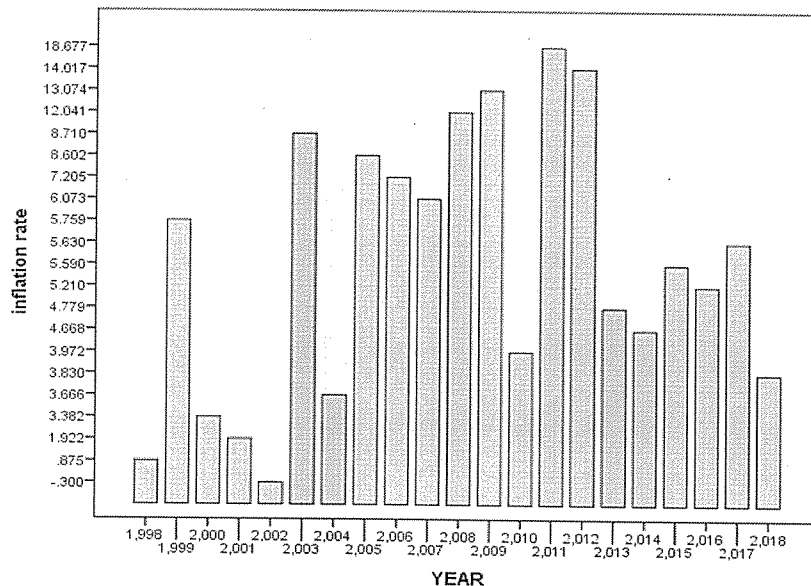
$$\text{Inflation rate} = 6.621 - 0.006 (\text{Interest rate})$$

Interpretation:

When interest rate is zero (0), the inflation rate is 6.621 units. But a unit change in interest rate leads to a reduction in inflation rate by 0.006 units.

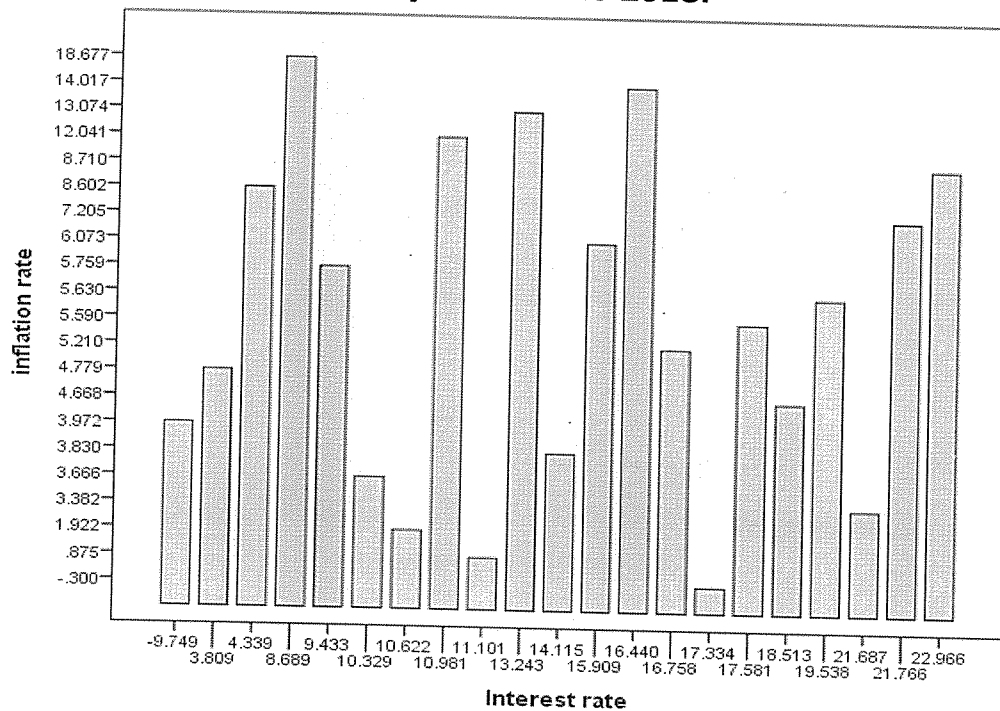
Generally, there is a negative relationship between inflation rates and interest rates as seen in the model above. This implies that when interest rate is high, the level of inflation is low.

4.5 The distribution of inflation rate in Uganda from 1998 to 2019 using a bar graph.



From the bar graph above, inflation rate was relatively low with 0.875 units, there was a rapid increase in inflation rate from 1998 to 1999 up to 5.759 units. There was a gradual decrease of inflation rate from the year 1999 to 2002. From 2003 to 2012 there has been a steady inflation rate which is greater than 3 units. From 2012 the level of inflation reduced from 14.017 units to 3.83 units in 2018. This incidence from 2012 to 2018 could have been caused by the increase in interest rates, reduction in money supply through the central bank of Uganda, reduction in balance of payment deficits among others.

4.6 Distribution of the relationship between interest rates and inflation rates in Uganda from the year 1998 to 2018.



The bar graph above shows the relationship between interest rates and inflation rates of Uganda from 1998 to 2018. There is a negative relationship between interest rate and inflation rate. That is when interest rates are lowered, the level of inflation increases.

CHAPTER FIVE

SUMMARY DISCUSSIONS, CONCLUSIONS AND FINDINGS

5.1 Introduction

This chapter presents the summary of the findings, conclusions and recommendation on all the variables of the study with emphasis being put on the predictors of inflation rate as drawn from the study findings. This also puts forward the areas of further research and also considered the hypotheses drawn from the study.

5.2 Summary of findings and conclusions

The purpose of the study was to find out the effect of interest rate on inflation in Uganda from 1998 to 2018. The researcher also required the findings of the level of interest rate and inflation in Uganda from 1998 to 2018.

The research showed that inflation rate was relatively low with 0.875 units; there was a rapid increase in inflation rate from 1998 to 1999 up to 5.759 units. There was a gradual decrease of inflation rate from the year 1999 to 2002. From 2003 to 2012 there has been a steady inflation rate which is greater than 3 units. From 2012 the level of inflation reduced from 14.017 units to 3.83 units in 2018. This incidence from 2012 to 2018 could have been caused by the increase in interest rates, reduction in money supply through the central bank of Uganda, reduction in balance of payment deficits among others.

The research showed that the interest rates were 11.101 units in 1998. There was a gradual decrease of interest rate from 11.101units to 9.433units in 1999. From 1999 to 2000 there was a rapid increase of interest rate from 9.433units to 21.687units. There was a decrease in interest rate from 2000 to 2002 from 21,687units to 17.334units. There were relatively high interest rates from 2002 to 2009. There was a rapid decrease of interest rates from 2009 to 2010 from 13.243 units to -9.749units. From 2011 to 2018 there has been a relatively steady interest rates ranging from 8 to 14units.

The rapid reduction in interest rates from 2009 to 2010 from 13.243 to -9.749 units could have been caused by some internal activities in the country of Uganda such as political preparations as a way of campaigning by the current government, issuing of money by the central bank was high thus a decline in interest rates in the period of 2009 to 2010.

According to the study, from 2012 the level of inflation reduced from 14.017 units to 3.83 units in 2018. This incidence from 2012 to 2018 could have been caused by the increase in interest rates, reduction in money supply through the central bank of Uganda, reduction in balance of payment deficits among others.

5.3 Recommendations

The government should regulate the amount of money in circulation through the central bank of Uganda. This can be done by using the central bank's monetary policies of Bank rates, open market operation, and selective credit control among others to solve the problem of inflation.

The government should control inflation rates through price control by using both price ceiling and price floor price legislation according to the government's objectives in the country of Uganda. A price floor is a government- or group-imposed price control or limit on how low a price can be charged for a product, good, commodity, or service. A price floor must be higher than the equilibrium price in order to be effective. Price ceiling is a government-imposed price control, or limit, on how high a price is charged for a product, commodity, or service. Governments use price ceilings to protect consumers from conditions that could make commodities prohibitively expensive. Such conditions can occur during periods of high inflation.

The government should use contractionary fiscal policy to curb inflation in the country this is another demand side policy, similar in effect to monetary policy. Fiscal policy involves the government changing tax and spending levels in order to influence the level of Aggregate Demand. To reduce inflationary pressures the government should increase tax and reduce government spending.

The government should advocate for wage freeze policy. Wage growth is a key factor in determining inflation. If wages increase quickly, it will cause high inflation. In 1998, there was a brief attempt at wage controls which tried to limit wage growth. However, it was effectively dropped because it was difficult to enforce widely.

5.3.1 Recommendation for further research

The researcher recommends other researchers to investigate other factors which lead to inflation since interest rate only cannot decide on the inflation rates in Uganda. The researcher recommends other researchers to investigate other factors which many lead to inflation and these factors include; embezzlement of government funds, issuance of excess currency in the country among others.

The researcher recommends other researchers to investigate other measures which should be put forward to solve the problem of inflation in the country. The solutions could be from either the economic, social or political perspectives.

The researcher recommends other researchers to carry out researches on the way how Central bank of Uganda issues out money in the country. Inflation could have been caused by the limited auditing and accountability provided by the bank of Uganda officials.

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